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PHRENOLOGY.

[David Skae]

EXTRACTED FROM "THE BRITISH QUARTERLY REVIEW."

(1.) *Contributions to the Mathematics of Phrenology.* By James Straton. Aberdeen, 1845. pp. 35.

(2.) *The Brain and its Physiology; a Critical Disquisition on the Methods of Determining the Relations between the Structure and Functions of the Encephalon.* By Daniel Noble, M.R.C.S. Eng. London, 1846. pp. 450.

Half a century has elapsed since Dr. Gall first announced to the world the elements of that system now known to us as Phrenology. This science, if science it may be called, has long since run the gauntlet of public opinion; it has outlived the first ardour of its supporters and the early virulence of its foes. Fifty years have been afforded for its establishment or refutation. In every enlightened country it has supported, during a long period, its public lecturers and periodicals; it has been made the subject alike of metaphysical and physiological investigation; the lights of science have been brought to bear upon it: anatomy, human and comparative; pathology, experiments upon living animals, and numerous other sources more or less direct, have been assiduously ransacked for evidence of its truth or falsehood. And now, when a critical inquiry into the functions of the brain, by a member of the medical profession, who is favourably known as a contributor to the medical periodicals of the day, has been offered to the public, claiming for Phrenology the rank of an inductive science, we are surely in a favourable position calmly to review the evidence which has been accumulated in favour of Phrenology, and dispassionately to ask whether or not it affords a correct physiology of the Brain, and a true picture of the human mind.

It may be remarked, at the outset of our inquiry, that Phrenology is not generally regarded by our most esteemed physiologists and metaphysicians as an ascertained part of their respective sciences. By the greater number of them it is more or less discredited: some utterly repudiating the entire system; others professing to believe certain of its general principles, but refusing to assent to the details. On the other hand, there are a few men of eminence, both in natural science and in letters, who have given their entire adherence to the system, and lent their aid in its support.

We make this general statement, for the purpose of pointing out that there must be some uncertainty in the nature of that evidence upon which the system rests. If the evidence were of the same nature as that upon which other inductive sciences are founded, Phrenology would, long ere this, have been either generally acknowledged or universally abandoned by scientific inquirers. Upon what, then, does this uncertainty depend? In what respect do the facts and observations of Phrenology differ from those of Anatomy, Physiology, Chemistry, and Mechanics? In this respect: they want precision and accuracy. They are not definite, nor tangible, nor mensurable. They are chameleon-like in their colour, and proteus-like in their form. The terminology of the system is altogether inexact. It has no place in other inquiries. The terms *large* and *small, full, rather full,* and such like, are altogether repudiated by the observers of nature in other departments. They have no existence in the vocabulary of science, and convey no meaning, or at least no truth that is at all worthy of confidence. If a thing is large, what is the size of it? if it is small, tell us the measurements.

Let us look a little more narrowly at the facts and principles of Phrenology. It proceeds upon certain postulates, which it contends are either substantiated by evidence, or such as will be readily granted by all parties. These are,—that the brain is the organ of the mind; and that the size of an organ is, *ceteris paribus,* a measure of its power. These principles being granted, it is said that observation has determined that individuals having certain faculties or propensities in an eminent degree, have certain parts of the brain proportionably *large,* and, therefore, that those particular parts of the brain manifest particular faculties of the mind. From these observations and conclusions it results that the brain is a congeries of organs, each of which is connected with a particular mental faculty; and that the size of each organ, and the power of the corresponding faculty, may be estimated by an examination of the external surface of the head or cranium. The observations which are said to have determined these facts may be described historically as follows:—Dr. Gall remarked that a certain individual who displayed great mental powers of a certain kind—say, e. g., of making numerical calculations—had a fulness or prominence in a certain part of the forehead. He found that other persons similarly endowed had a similar fulness. Hence he inferred that the part of the brain under that prominence was larger than usual; that that part of the brain was the organ of Number, and that Number was a distinct faculty of the human mind. Proceeding in this way, he found that particular dispositions and propensities, strongly developed in different individuals, were associated always with fulness or greater size of other parts of the cranium. He thus succeeded in peopling the surface of the brain with the thirty-five phrenological faculties. Dr. Gall was followed by Dr. Spurzheim, Mr. Combe, and others, who, from an extended series of observations, verified, with some modifications, the conclusions of the author of this system. The result of the whole of the phrenological inquiries is, that we now have the surface of the cranium mapped out into thirty-five or thirty-seven compartments, each of which covers the organ of a certain faculty, and that the mind is made up of these thirty-five or thirty-seven faculties. The entire truth of the system, it is to be remarked, rests upon the assertion that, in the opinion of a certain number of observers, in a vast number of instances, remarkable activity or power of the so-called faculties or propensities has been always found associated with large size of that part of the cranium which indicates them; and that great deficiency of those faculties or propensities has been accompanied with diminished size of the corresponding organs and parts of the cranium covering them.

Phrenology has had numerous assailants. Some have attacked it with the shafts of ridicule. Some have argued against it on metaphysical grounds, contending that the theory which it gives of the mind is inconsistent with our own consciousness. Others have attempted to invalidate the system, by showing its inconsistency with the structure of the cranium and the anatomy of the brain. Others, again, have opposed to it facts derived from the development of different parts of the brain, both in man and in the lower animals. And, lastly, pathological observations and experiments upon living animals have been adduced as leading to conclusions subversive of the phrenological system.

Amidst this host of assailants the phrenologists have manfully kept their ground; defending themselves, indeed, with indifferent success, but still fighting with their backs to the wall reared for them by their facts and observations. 'Disprove our 'facts,' say they, 'but while they remain, we care not for your 'theoretical objections. If our facts are true, we scorn your 'theories;—ours is an inductive science.'

> 'In no other way,' says Mr. Noble, 'can Gall's physiology be judged; it is altogether an affair of fact, which observation alone can determine.' * * * 'Settle, in the first place, the direct question of fact, then reason, mutilate animals, compare anatomical structure in diverse species, conjecture psychical correspondence, give the best explanation you may to morbid phenomenon; but decide, first, upon the validity of the phrenological *facts*.'—pp. 212, 213.

To the facts they appeal, and properly; to these facts then let us first direct our attention, reserving our criticism on those collateral points to which we have referred, and to which Mr. Noble directs himself at some length, for the subsequent part of our remarks.

The facts upon which Phrenology professes to be founded have been often disputed, and their accuracy denied. But the *pros* and *cons* on this point have been found to be altogether unsatisfactory, and such as to leave either party more strongly convinced of the truth of their own opinions. Here are instances, says one, in which the organ of, e. g., Destructiveness was large, and yet the individuals manifested no such propensity. Oh, says one phrenologist, the organ was inactive and inoperative from want of exercise or cultivation;—or, says another, it was held in abeyance and control by other faculties; or perhaps, says another, learned in anatomical niceties, there was a deficiency of the grey matter of the brain, or a defect in the quality of it;—size is a measure of power *only ceteris paribus.* But, says the objector, if there are all these exceptions to your rules, there are as many sources of fallacy in the observations upon which your system is founded; it must be, after all, very doubtful whether, amidst the exceptions, you have hit upon the rule. We appeal, retorts the phrenologist, to the most extended series of observations; and to the skulls and casts of innumerable persons whose characters are well known;—to those of poets, historians, musicians, artists, philosophers, men distinguished by their piety or benevolence, or notorious for their licentiousness and crimes. With the heads of such persons our museums are filled, and they all display evidences in their exterior form of the characteristics which distinguished the individuals; and upon these heads the truth of our system rests.

If the inquirer now proceeds to test the truth of Phrenology by the accredited examples upon which it is founded, he finds, if he is accustomed to rigid and accurate methods of investigation, all that uncertainty of which we have already spoken. He is told that if he looks at a certain part of this cranium or the other that he will see that it is 'full,' or 'rather full,' or 'large,' or 'very large' in one particular part; but the amount of this fulness compared with another head he is unable to ascertain. If he measures it by ascertaining how far the prominent point is distant from the ear, or any central point, and compares this measurement with a similar one on another cranium, he is told, if the result be unfavourable to Phrenology, that the heads are of different sizes—the one is large and the other small—or, if they are nearly alike in size, that he must take into account the breadth of the organ, as well as its prominence or distance from any central point.

Here the matter at present lies, and in this uncertainty each one is left to use his eyes and his judgment to the best of his ability, and form an opinion favourable or unfavourable to Phrenology, as he will in all probability do, according to the previous bias of his mind. We think we have fairly represented the *nature* of the evidence in favour of Phrenology—of the value or amount of it we have as yet said nothing—we deem it of importance to place the matter fully before our readers, in order that we may inquire whether there is any possibility of attaining greater precision, and of bringing the facts and observations of phrenology to an *experimentum crucis*. We think that there is. We cannot doubt that whatever differences the eye can see, the hand can certainly measure; and that there must be methods of mensuration by which the so-called facts upon which Phrenology is founded can be reduced to figures and verified to a demonstration, if correct.

'It is surely impossible,' says Mr. Straton in the pamphlet before us, 'to contemplate the amazing accuracy which instrumental measure has imparted to many departments of science,—an accuracy immensely beyond the reach of the finest unaided eye, and not feel a wish that some such services were rendered to phrenology. It is, indeed, easier to conjecture than to certify, why so little has hitherto been done in efforts to render these services. It cannot be the difficulties which stand in the way. The human head is not an object which, either by its magnitude or its minuteness, its flexibility or its irregularity, defies either the application of instruments or the powers of calculation. It seems impossible that those differences in size which are so obvious to the eye cannot be measured by some uniform scale, and expressed in terms of definite known value. * * * That the ordinary specifications of size and proportions are all but intolerably painful, vague, and perplexing to some minds, is a fact publicly recorded by friendly hands with much ability, and much more bitterness than comports with beauty in philosophical disquisition. Stand the matter how it may, this much will be readily admitted, that the increasingly rigid requirements of scientific minds, the changing social arrangements,' (?) 'the progress of individual improvement—in short, the interests of all (except the unprincipled quack) call for the utmost precision in estimating and recording size, which is, in the nature of the case, practicable.'

What 'changing social arrangements,' have to do with the matter we are at some loss to divine, but, thanking Mr. Straton for what he has so well done for the cause of truth by his measurements, we would address ourselves to the same task, and do what he has not done, bring Phrenology to the test of figures.

What, then, is the size of an organ in the estimate of a phrenologist's eye? It can be only its degree of prominence as compared with the neighbouring surface of the cranium, or its distance from some central point. Of the breadth of the organ it is impossible he can form any estimate, except such as depends upon the breadth or size of the entire head; for if the organs do not always occupy the same relative part of the surface of the entire cranium, it is impossible for any phrenologist to define the precise limits of their cranial surface. Will any phrenologist undertake to say that the organ of Benevolence occupies a greater relative portion of the surface of the cranium in one head than in another, that in one it encroaches upon Veneration, and in another, Veneration encroaches upon it? We think not. If he did, there would be an end of all certainty in the matter. The only estimate which the eye can form is and must be that which we have stated—the prominence of a part of the cranium compared with the neighbouring surface, or the distance of that prominence from a central point. This distance or degree of prominence is a matter easily ascertained by actual measurement, and accordingly, phrenologists have accredited this mode of observation by the use of the callipers, and have, in many of their works, reported careful and extensive measurements made in this way.

Now comes the real difficulty. The heads or crania thus measured, all differ in size, and it is thus impossible to compare directly the measurements of one with those of another. If they were all exactly of the same size, or rather capacity, we could compare those measurements with precision, and say at once to the fraction of an inch how much more tune Handel had than Haydn. We could then, if we had the distance of the central point of each organ from the external ear—say which preponderated over its neighbour, as compared with the corresponding organ of another individual.

This difficulty, we conceive, is readily got over, and once got over, we think Phrenology must stand or fall by the result. It is a well known geometrical principle, that similar solids are to each other as the cubes of their homologous lines, or, the cube roots of similar solids are to each other as their homologous lines. If, therefore, we ascertain the capacity of any skull, which may be readily done by immersing it in water up to a given point, and if we ascertain by measurement the distance of all the organs from the ear (meatus auditorius), or from each other, we can readily produce a skull of *any given capacity* preserving the same *form* as the measured skull, and having all the linear measurements precisely what they would have been had the skull measured been of the capacity required. We may thus convert any number of skulls into skulls of precisely the same *size*, or *capacity*, each one, however, retaining exactly its own *form*, and the same relative development of its different parts. This done, the problem is solved, and we can at once compare all the linear measurements of them with fractional accuracy.

For the purpose of ascertaining how far Phrenology would stand this test, we visited one of the oldest phrenological museums in the country, in company with a phrenologist of note, and a well known physiologist, distinguished for his habits of patient and accurate observation, and, with a phrenological bust before us, we carefully measured casts of the skulls of four murderers, Haggart, McKaen, Pollard, and Lockey. For the purpose of drawing a comparison between these and heads of persons characterized by intelligence, wit, imagination, the kindlier affections of our nature, the sentiments of firmness, courage, and morality, we measured the casts of the skulls of Burns, Swift, La Fontaine, King Robert the Bruce, and those of two females, Heloise, and Stella. These, we conceived would furnish many interesting points of contrast, by which the truth of Phrenology might be tested. We do not profess that these observations are sufficiently numerous for positive induction, but they may direct the investigation of others who have leisure and inclination to pursue the inquiry, and who may agree with us in thinking that this is the only certain method of ascertaining the truth.

We may add, that the capacities of the crania were ascertained by repeated immersions in water up to a line running between the meatus auditorius and the junction of the frontal with the nasal bones, and a careful measurement of the number of cubic inches of water displaced. In making the linear measurements, one leg of the callipers was placed as nearly as possible in a corresponding part of the meatus auditorius of all the skulls, while the other, guided by the bust before us, and by our phrenological friend, was with the utmost attainable accuracy brought to the centre of the organ to be measured; and, while they remained on the cast, the measurements were read off by the gentlemen assisting from the other extremities of our callipers, they having first satisfied themselves that they were properly applied to the several organs.

The following table exhibits the actual capacities and measurements:—

Capacities of Crania, in cubic inches.

La Fontaine	149·5
Burns	147·7
Heloise	142·7
Lockey	142·05
Bruce	136·5
Swift	129·15
Haggart	128·6
Pollard	122·9
Stella	119·2
M'Kaen	111·05

Long diameter of Cranium from Occipital Spine to Individuality.

Swift	7·968
Pollard	7·87
Bruce	7·8
Burns	7·68
Haggart	7·65
Lockey	7·6
Heloise	7·59
M'Kaen	7·58
La Fontaine	7·54
Stella	7·5

Long diameter of Cranium from Occipital Spine to Comparison.

Swift	7·76
Haggart	7·63
Heloise	7·63
Stella	7·61
Lockey	7·6
Pollard	7·57
Burns	7·49
M'Kaen	7·48
La Fontaine	7·45
Bruce	7·4

Meatus Auditorius to Meatus Auditorius.

Bruce	5·4
La Fontaine	5·03
Stella	4·89
Heloise	4·89
Swift	4·72
Burns	4·70
Lockey	4·67
M'Kaen	4·66
Pollard	4·60
Haggart	4·31

Transverse diameter, Caution to Caution.

Swift	5·87
La Fontaine	5·80
Stella	5·76
Bruce	5·7
M'Kaen	5·69
Lockey	5·64
Burns	5·57
Haggart	5·54
Pollard	5·52
Heloise	5·09

Meatus to Occipital Spine, (Amativeness.)

Bruce	4·57
Swift	4·40
Lockey	4·09
Pollard	4·4
Stella	3·97
M'Kaen	3·97
Burns	3·94
Heloise	3·9
Haggart	3·87
La Fontaine	3·82

Meatus to Philoprogenitiveness.

Pollard	5·21
Swift	4·93
Stella	4.83
Lockey	4·82
Heloise	4·79
Haggart	4·64
Burns	4·61
Bruce	4·59
M'Kaen	4·55
La Fontaine	4·5

Meatus to Concentrativeness.

Pollard	5·52
Bruce	5·4
Swift	5·24
Haggart	5·23
Heloise	5·16

Burns	5·09
Stella	5·05
M'Kaen	4·97
La Fontaine	4·87
Lockey	4·65

Combativeness to Combativeness.

Swift	5·87
M'Kaen	5·28
Stella	4·89
Bruce	4·8
Burns	4·8
Pollard	4·6
Haggart	4·11
La Fontaine	4·06
Heloise	3·95
Lockey	3.84

Destructiveness to Destructiveness.

Bruce	6·2
Stella	6·12
Swift	6·08
Lockey	6·01
M'Kaen	5·9
La Fontaine	5·8
Pollard	5·778
Heloise	5·73
Haggart	5·5
Burns	5·18

Secretiveness to Secretiveness.

Lockey	6·14
La Fontaine	6·09
Bruce	6·05
Stella	5·98
M'Kaen	5·98
Pollard	5·9
Swift	5·87
Haggart	5·75
Heloise	5·56
Burns	5·472

Acquisitiveness to Acquisitiveness.

Lockey	5·84
Swift	5·76
Stella	5·46
M'Kaen	5·41
La Fontaine	5·41
Pollard	5·37
Burns	5·28
Bruce	5·25
Heloise	5·16
Haggart	5·08

Meatus of Right Side to Adhesiveness of Left.

Stella	6·04
Bruce	6·
Pollard	5·88
Swift	5·87
Haggart	5·85
Heloise	5·68
M'Kaen	5·59
Lockey	5·46
Burns	5·146
La Fontaine	5·12

Meatus to Self-Esteem.

Haggart	5·64
Bruce	5·60
Pollard	5·57
Stella	5·44
Heloise	5.38
Swift	5·37
M'Kaen	5·28
La Fontaine	5·25
Burns	5·18
Lockey	4·97

Meatus to Firmness.

Bruce	5·65
Haggart	5·65
La Fontaine	5·61
Stella	5·58
Swift	5·56
Heloise	5·56
Pollard	5·52
M'Kaen	5·38
Burns	5·28
Lockey	5.16

Meatus to Veneration.

La Fontaine	5·55
Haggart	5·44
Bruce	5·4
Heloise	5·38
Swift	5·35
Stella	5·33
Pollard	5·32
Burns	5·28
M'Kaen	5·23
Lockey	5·06

Meatus to Benevolence.

La Fontaine	5·51
Burns	5·47
Haggart	5·44
Stella	5·33
M'Kaen	5·28
Pollard	5·27
Lockey	5·26
Heloise	5·25
Bruce	5·15
Swift	5·03

Meatus to Comparison.

Stella	5·3
La Fontaine	5·27
Pollard	5·21
M'Kaen	5·1
Bruce	5·1
Burns	5·09
Haggart	5·06
Lockey	5·06
Swift	5·03
Heloise	4·89

Meatus to Eventuality.

La Fontaine	5·13
M'Kaen	4·99
Lockey	4·97
Pollard	4·96
Stella	4·93
Haggart	4·93
Bruce	4·9
Swift	4·82
Burns	4·8
Heloise	4·7

Meatus to Causality.

La Fontaine	4·79
Heloise	4·73
Bruce	4·7
Haggart	4·62
Burns	4·6
Lockey	4·58
Stella	4·57
Pollard	4·5
Swift	4·5
M'Kaen	4·45

Meatus to Individuality.

La Fontaine	4·98
M'Kaen	4·86
Bruce	4·83
Pollard	4·8
Lockey	4·77
Stella	4·73
Swift	4·72
Haggart	4·72
Burns	4·7
Heloise	4·55

Meatus to Wit.

Haggart	4·96
M'Kaen	4·14
Heloise	4·01
Lockey	3·99
La Fontaine	3·87

Bruce	3·85
Burns	3·84
Stella	3·81
Pollard	3·68
Swift	3·56

Wit to Wit.

Heloise	4·31
Lockey	4·29
La Fontaine	3·97
M‘Kaen	3·93
Haggart	3·9
Pollard	3·78
Swift	3·72
Stella	3·7
Bruce	3·7
Burns	3·571

Ideality to Ideality.

Lockey	5·36
Stella	5·11
M‘Kaen	4·97
Swift	4·93
Pollard	4·91
Burns	4·8
Heloise	4·66
Bruce	4·65
La Fontaine	4·57
Haggart	4·41

Number to Number.

M‘Kaen	4·61
Swift	4·5
La Fontaine	4·42
Lockey	4·29
Stella	4·14
Haggart	3·93
Burns	3·93
Bruce	3·9
Heloise	3·84
Pollard	3·68

Tune to Tune.

Lockey	4·66
M‘Kaen	4·65
La Fontaine	4·47
Stella	4·24
Burns	4·22
Bruce	4·1
Haggart	4·0
Heloise	3·99
Swift	3·98
Pollard	3·93

These measurements being made, we took the cranium of Swift as being about the mean; and in accordance with the rule referred to, by the following formula, as the cube root of the actual capacity of any skull is to the cube root of the standard capacity, so is any actual linear measurement of the former to the corresponding linear measurement in the same reduced to the standard capacity, we converted the measurements of all the other crania into those of a cranium having the same capacity as Swift's. That is to say, we converted all the crania into crania having the same capacity, but each remaining similar to its original in *form*, and preserving the same relative dimensions of its different parts.

The following are the results, arranged for the convenience of reference and comparison under the different phrenological faculties:—

1. *Amativeness.*

Bruce	4·48
Pollard	4·37
Swift	4·2
Lockey	4·08
M‘Kaen	4·04
Burns	3·92
Heloise	3·85
Haggart	3·78
La Fontaine	3·76
Stella	3·75

2. *Philoprogenitiveness.*

Pollard	5·18
Bruce	4·81
Lockey	4·807
Heloise	4·74
Swift	4·70
M‘Kaen	4·63
Burns	4·599
Stella	4·56
Haggart	4·53
La Fontaine	4·426

3. *Concentrativeness.*

Pollard	5·49
Bruce	5·3
Haggart	5.11
Heloise	5·09
Burns	5·06
M‘Kaen	5·05
Swift	5·00
La Fontaine	4·8
Stella	4·76
Lockey	4·62

4. *Adhesiveness.*

Bruce	5.89
Pollard	5·35
Haggart	5·71
M‘Kaen	5·68
Heloise	5·61
Swift	5·60
Stella	5·44
Lockey	5·43
Burns	5·12
La Fontaine	5·04

5. *Combativeness.*

Swift	5·60
M‘Kaen	5·36
Burns	4·78
Bruce	4·71
Heloise	4·68

Stella	4·62
Pollard	4·58
Haggart	4·01
La Fontaine	4·003
Lockey	3·82

6. *Destructiveness.*

Bruce	6·10
M'Kaen	5·99
Lockey	5·91
La Fontaine	5·81
Swift	5·80
Stella	5·77
Pollard	5·74
Heloise	5·658
Haggart	5·37
Burns	5·16

7. *Secretiveness.*

Lockey	6·1
La Fontaine	6·09
M'Kaen	6·08
Bruce	5·94
Pollard	5·86
Stella	5·65
Haggart	5·61
Swift	5·60
Heloise	5·49
Burns	5·45

8. *Acquisitiveness.*

Lockey	5·81
Swift	5·50
M'Kaen	5·50
La Fontaine	5·34
Pollard	5·34
Burns	5·25
Stella	5·15
Bruce	5·15
Heloise	5·09
Haggart	4·96

9. *Caution.*

M'Kaen	5·78
La Fontaine	5·72
Lockey	5·62
Swift	5·6
Bruce	5·59
Burns	5·54
Pollard	5·49
Stella	5·44
Haggart	5·41
Heloise	5·03

10. *Self-Esteem.*

Pollard	5·54
Haggart	5·51
Bruce	5·49
M'Kaen	5·36
Heloise	5·33
La Fontaine	5·17
Burns	5·16
Stella	5·13
Swift	5·10
Lockey	4·94

11. *Firmness.*

Bruce	5·55
La Fontaine	5·53
Haggart	5·51
Heloise	5·49
Pollard	5·49
M'Kaen	5·48
Swift	5·30
Stella	5.26
Burns	5·25
Lockey	5·13

12. *Veneration.*

La Fontaine	5·47
Heloise	5·33
Haggart	5·31
M'Kaen	5.31
Bruce	5·30
Pollard	5·29
Burns	5·25
Swift	5·10
Lockey	5·04
Stella	5·03

13. *Benevolence.*

Burns	5·45
La Fontaine	5·43
M'Kaen	5·36
Lockey	5·35
Haggart	5·31
Pollard	5·23
Heloise	5·17
Bruce	5·055
Stella	5·03
Swift	4·80

14. *Comparison.*

La Fontaine	5·19
Pollard	5·18
M'Kaen	5·18
Burns	5·06
Lockey	5·04
Bruce	5·007
Stella	5·0
Haggart	4·94
Heloise	4·836
Swift	4·80

15. *Eventuality.*

M'Kaen	5·07
La Fontaine	5·04
Lockey	4·94
Pollard	4·93
Haggart	4·81
Bruce	4·81
Burns	4·78
Stella	4·65
Heloise	4·64
Swift	4·6

16. *Individuality.*

M'Kaen	4·94
La Fontaine	4·91
Pollard	4·78
Lockey	4·75
Bruce	4·74
Burns	4·68
Haggart	4·61
Swift	4·50
Heloise	4·49
Stella	4·47

17. *Causality.*

La Fontaine	4·72
Heloise	4·69
Bruce	4·61
Burns	4·59
Pollard	4·58
Lockey	4·55
M'Kaen	4·52
Haggart	4·51
Stella	4·31
Swift	4.30

18. *Wit* (A.)

Haggart	4·84
M'Kaen	4·21
Lockey	3·97
Heloise	3·93
Burns	3·82
La Fontaine	3·81
Bruce	3·77
Pollard	3·66
Stella	3·59
Swift	3·40

19. *Wit* (B.)

Lockey	4·26
Heloise	4·25
M'Kaen	4·00
La Fontaine	3·907
Haggart	3·81
Pollard	3·76
Bruce	3·63
Burns	3·55
Swift	3·55
Stella	3·49

20. *Ideality.*		21. *Number.*		22. *Tune.*	
Lockey	5·33	M‘Kaen	4·69	M‘Kaen	4·73
M‘Kaen	5·05	La Fontaine	4·35	Lockey	4·63
Pollard	4·88	Swift	4·3	La Fontaine	4·40
Stella	4·83	Lockey	4·26	Burns	4·21
Burns	4·78	Burns	3·92	Bruce	4·02
Swift	4·70	Stella	3·9	Stella	4·00
Heloise	4·60	Haggart	3·84	Heloise	3·93
Bruce	4·56	Bruce	3·83	Haggart	3·91
La Fontaine	4·51	Heloise	3·79	Pollard	3·90
Haggart	4·31	Pollard	3·64	Swift	3·80

On glancing over these tables, of the results of which we could have formed no possible preconception before our calculations were made, we may well ask ourselves, if they are correct, can phrenology be true? In a few points the results harmonize with the phrenological doctrine, but in others, and far the greater proportion, they are altogether subversive of it. Is it possible that two females, the accomplished Heloise and Miss Johnson, had more Combativeness and Destructiveness than the notorious David Haggart—that Swift had less *Wit* in relation to the size of his brain and his other organs than all the other nine, and yet that phrenology can be true?

Let us glance over these tables in succession, and briefly examine the more obvious reflections which they suggest.

In comparing the measurements of the different crania, thus reduced to a common size, it will be necessary to keep in view the difference in size of the original heads, and to qualify our comparisons by the application of the acknowledged phrenological principle, that greater capacity, or greater size, gives greater energy to the whole character, but does not alter the individual peculiarities.

Beginning with Tables 1 and 2, it may be remarked of La Fontaine, who has the smallest organs of amativeness and philoprogenitiveness, that this certainly corresponds with the character of a man who left an accomplished and beautiful wife, who had done everything to captivate his affections and secure his esteem, for the sake of spending his time with the wits of Paris. On the entreaties of his friends, he set out with the purpose of reconciling himself to her; but on inquiring at the house, and being told she was gone to church, he immediately returned to Paris; and when asked about his reconciliation, he answered, that ‘he had been to see his wife, but was told she was at church.’ Equally careless was he of his son, with whom he soon parted. Meeting him afterwards, and not recognising him, he remarked that he seemed a boy of parts and spirits; and on being informed that this promising boy was his own son, he answered very unconcernedly, 'Ha! truly, I am glad on't.'

The remainder of these two tables, however, is almost entirely opposed to phrenology; for, in the first place, Bruce is considered by phrenologists to have the organ of Amativeness 'full,' and we find that Haggart, Heloise, Burns, M'Kaen, and Stella, who all displayed this propensity to a great extent during life, have an organ of Amativeness half an inch less than that of Bruce, with relation, be it remarked, to heads of the very same size—nay more, they all have the organs less than Swift, who, says his biographer, 'was naturally temperate, chaste, and frugal.' What is the evidence afforded by history of the amativeness of the five individuals who have the organ so small? 'You have mistaken me,' says David Haggart, in answer to the question of Mr. Combe, who said, 'You would not be the slave of sexual passion?' 'You have mistaken me in this point of sexual passion, for it was my greatest failing, &c.;' and he adds, that he believes he was a master of the art of seduction more than any that he followed. Is it necessary to mention, that all the intellectual accomplishments of Heloise failed to preserve her honour? and of Stella, we may only remark, that no two histories are liker each other than those of Abelard and Heloise, and Dean Swift and Miss Johnson. A writer in the "Phrenological Journal" adduces evidence from the life of M'Kaen, to show that he possessed strong amativeness; and everyone knows that Robert Burns was eminently endowed with this propensity. Of the whole five it may be remarked, that amativeness formed a distinct feature in their history, and gave a direction to the whole tenour of their lives and actions; yet they had organs three, four, and five-tenths of an inch less than those of men who were never characterized by this propensity. Nor can it be answered, that these organs, although absolutely smaller than those of Swift and Bruce, were yet large in relation to the other faculties and organs of the individuals themselves; for on referring either to history or the subsequent tables, it will be seen that the intellectual and moral faculties of Swift and Bruce were many of them less, and the organs less, than those of the five persons just named.

Again, convincing evidence is afforded in the life of M'Kaen, that he had the strongest regard for his wife and children. In his last farewell to them, he says of his children, that they were 'much the objects of his love, and he would retain for them to 'the last the highest regard as children begotten of his own 'body.' In the narrative of his life, he says, that after his capture he would have committed suicide but for the 'cruel idea' of leaving his wife and family in prison, under suspicion of being concerned in the murder when they were totally innocent*—yet he had confessedly small Conscientiousness.† That Burns displayed in his lifetime great Philoprogenitiveness, we need hardly stop to prove; yet these two individuals have organs considerably less than those of persons who never displayed the propensity at all.

Of the measurements in Table III., little can be said, as the functions attributed to this organ are vague and ill understood. It may, however, be remarked, that if it gives permanence to ideas and emotions, the smallness of the organ in Stella is inconsistent with the theory, and that we would have expected a larger share of it in Swift, Burns, and Heloise, all of whom in their lives and writings abundantly evinced the permanence of their emotions.

The size of the organs of *Adhesiveness* in the different heads, appears to correspond pretty closely with what the characters of the individuals would have led us to anticipate, with one exception. Burns was certainly characterized by the strength of his attachments, yet he has the organ smaller than the other eight, and scarcely larger than La Fontaine, in whom the organ and the faculty were alike of the smallest measure.

Combativeness.—This table displays some facts favourable to phrenology, and others which are utterly irreconcilable with it. Lockey, a poacher and a murderer, has the smallest organ. Pollard, another murderer, has less than either Heloise or Stella, while Haggart, who was extremely apt to strike, has an organ which measures *one inch* less than Swift's, and *half an inch* less than Stella's, a patient and peaceable woman, and scarcely more than La Fontaine, a man of the utmost apathy.

In the organ of *Destructiveness*, Haggart also measures very little compared with others who displayed far less of the propensity, or none at all. He measures less here again than either Heloise or Stella, and *half an inch* less than the facile French poet. Burns, who displayed so much impetuosity of character, and wrote sentiments fired with energy, has the smallest organ of all.

Bruce has this organ very large, but still it does not exceed that of La Fontaine, so much as his exceeds those of Heloise and Stella, or theirs that of Burns.

The skull of Pollard, in which this organ is nearly of the same size as in Stella, smaller than in Swift or La Fontaine, and half an inch less than in Bruce, was that of a man who, according to a writer in the "Phrenological Journal," had evidently 'been labouring under an excessive excitement of destructive- 'ness which had become so habitual and ungovernable, as to 'give clear indications before hand of its existence and ten- 'dency.'* He was a butcher by trade, and a man of very depraved habits. Under the influence of jealousy, he stabbed a man and his wife, and four children, his own mistress, and afterwards himself, the acts being committed with the most savage atrocity. Of this ungovernable propensity to kill there is certainly no evidence afforded by the form of Pollard's head. The organs of Combativeness and Destructiveness, are comparatively small; they are so relatively; for on looking over the other tables it will be seen, that this head is the finest of the whole ten in its phrenological development. He is not deficient in *Firmness*, having nearly as much as Bruce and Haggart, who are said to have had this organ prodigiously large. He has more *Benevolence* than Bruce and Swift, who were both considered charitable men; more Veneration than Burns, who is allowed to have had both the organ and the faculty large; larger Causality than Swift, and larger Comparison, Eventuality, Ideality and Wit, than either Swift and Burns, who both displayed all these faculties in an eminent degree. What, it may be asked, made this man a murderer? What induced him to be a butcher? How did he acquire depraved habits? Why, with such a head, did he not educate himself, and become another Shakspeare? We wish we had the skulls of Shakspeare, Milton, and Bunyan, we think we could match them, and shew a head that (phrenologically) *should* have beat them all—but it did not.

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* Narrative of the Life of James M'Kaen. Fifth edition, page 57.

† Phren. Journ. p. 605, vol. iii.

Similar remarks as to the counteracting organs—those of the moral sentiments and intellectual faculties, might be made in regard to David Haggart; they are considerably larger than those of Swift, Heloise, Stella, and Burns. He has as large a Veneration as any of them, save La Fontaine, who *displayed* none at all; he has larger Benevolence than Bruce or Swift; indeed, he has more of almost everything good than Swift. Nor can it be urged that he was instigated to his deeds of outrage and robbery by the desire of gain, for he has a smaller organ of *Acquisitiveness* than any of the other nine.

That Burns should have a very small organ of *Secretiveness*, and Lockey a very large one, is not to be wondered at; the one was open and undisguised in all his actions, and the other was a poacher. So far nature and phrenology are agreed. Nor is it less in accordance with truth, that Bruce, who gained his victories more often by stratagem and surprise, than by open attack, should also be largely endowed with this quality. But that David Haggart should have the organ so small, and La Fontaine should have it so large, compared with these men, are facts which cannot be reconciled with Phrenology, and which Phrenology can never reconcile with truth. Of La Fontaine, who has the organ *large*, his biographer says, speaking of his writings, 'he is truly original in his manner, which is so easy, 'so natural, so simple, so delicate, that it does not seem possible 'to exceed it;' and speaking of his character, he adds, 'his life 'had as little of affectation in it as his writings; he was all 'nature, approaching to the extreme of simplicity, or even stupidity, without a grain of art.'

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* Phren. Journ. iii. p. 394.

Of Haggart, on the other hand, who has the organ nearly half an inch smaller than La Fontaine, the following is his own account of the faculty:—'As to this point, there were few that 'ever knew any of my secrets; even the best of them could 'hardly sound my depths, for I knew that if I could not keep 'my own mind, another would not do it. No man could ever 'say that he saw my countenance grieved, although I was in 'the greatest trouble of mind that a man could possibly be in.' Nor could the large 'Love of Approbation,' which Mr. Combe says he had, overcome the activity and power of this little organ of secretiveness, for he adds, 'the applause that I might have 'got, had I been desiring applause, was kept from me by my 'determined way of keeping my mind within my own breast, as 'I always did.'

Haggart, who stole night and day for four years, with unexampled activity, has the smallest organ of *Acquisitiveness.* With the exception of the poacher, none of the others, so far as we know, ever stole at all. Swift, who with that exception has the largest organ, and the least Benevolence of the whole ten, was not a thief; but although frugal, was 'a most kind and generous master, and very charitable to the poor.' The poor within the liberty of his cathedral, were better regulated than in any other in the kingdom; he built an alms-house for them, 'and preserved among them uncommon cleanliness and decency, 'by constantly visiting them in person.' La Fontaine, who has the organ also large, shewed little of this propensity, for on his annual visit to his wife in September, he always sold off some part of his family estate.

La Fontaine has the largest organ of *Veneration*, and, omitting Heloise, the next, in point of size, is Haggart's. Neither of them can, we think, be accused of a tendency to venerate what is great or good. The immoral tendency of La Fontaine's tales is well known. One of them, which contained a very profane application of some words of Scripture, he dedicated to a celebrated divine. He dined on one occasion with a person of distinction, and though he ate very heartily, not a word could be got from him, until at last, rising soon after from table, on pretence of going to the Academy, and being told he would be too soon, he answered, 'Oh, then I'll take the longest way.' Racine once carried him to the Tenebræ, the Romish service in representation of our Saviour's agony in the garden, and perceiving it was too long for him, he put a Bible into his hands. Fontaine happening to open it at the prayer of the Jews in Baruch, read it over and over with such admiration, that he could not forbear saying to Racine, 'This Baruch is a fine writer; do you know anything of him?' On another occasion, hearing some ecclesiastics conversing on the merits of St. Austin, after a profound silence, he asked one of them, with the most unaffected seriousness, 'whether he thought that St. Austin had more wit than Rabelais?' In these two crania, those of Haggart and La Fontaine, the organs of 'the propensities' are small.

Of the measurements of Eventuality, we would only say, that surely this is the true organ of Destructiveness; we advise phrenologists to try it, for here all the murderers are at the top, and all the quiet people at the bottom,—La Fontaine excepted, who, for aught we know, might have been a murderer, if he had had temptation and opportunity.

The measurements of the organ of Wit require no comment; Swift has the smallest! Indeed, on carrying the eye over the tables, we think that the worst head of the series is that of Swift. The posterior region of the head is on the whole larger, and the middle and anterior regions smaller than most of the others.

With reference to the energy with which the predominating faculties of these ten individuals were manifested, it will be seen, by reference to the capacities of the different crania, that the smaller heads were, generally speaking, the most energetic. Swift and Haggart, who are rather below the mean, and should therefore have been least energetic and active, displayed the greatest energy and intrepidity of character; the one was the most absolute monarch of the populace in Dublin that ever governed; and the other displayed the most unwearied energy and perseverance in crime. La Fontaine, on the other hand, with the largest head of all, was a man of the utmost apathy, being the greater part of his life a mere dependant in the house of Madame de la Sabliere, who, when she had turned away all her servants, declared that she had kept but three animals in her house, which were her dog, her cat, and La Fontaine.

We have thus far, in compliance with the appeals of phrenologists, addressed ourselves to the facts of their system. We confess that our facts are few, but they are derived from accredited specimens of the evidence on which that system rests. They are as extensive as our time and our present limits permit. The measurements were made with a sincere desire to arrive at truth; they were made with the utmost care; the calculations are founded upon principles in which we cannot see any fallacy. The results are, to our mind, totally incompatible with the truth of the organology of this system.

Let us again turn to the work of Mr. Noble, and review what else remains to be said in defence of this 'inductive science.'

The principal scope of the writer is to show that other methods of investigating the functions of the brain than the phrenological are utterly inadequate, and have led only to vague, general, and contradictory conclusions. Our limits permit us to follow his argument only in a cursory manner; and, indeed, the discussion of the anatomical and physiological details which it involves, is more properly adapted for a purely scientific or medical journal than for our pages.

The first method of investigating the functions of the brain, commented on by our author, is that of experimenting upon the brains of living animals. Such experiments, he contends, have led to the most contradictory and uncertain results. They are performed upon the lower animals, and of the changes produced in them, by the removal of portions of the brain, we can judge only by external manifestations. The pain, and loss of blood, and destruction of other parts besides that intended to be removed, all combine to render it uncertain how much of the result is to be ascribed to the removal of the portion of the brain, and how much to other causes.

Now, although it must be admitted that there is much truth and force in these statements, and that accordingly many discordant *inferences* have been deduced by different experimenters from the vivisections made by them; yet, on the other hand, it cannot be denied that, cruel and unnecessary in many instances as such experiments have been, yet in the hands of our most esteemed physiologists, they have led to the most valuable and unquestionable discoveries in modern physiology. It has been by such experiments that the functions of most of the nerves have been discovered; that the nerves of motion have been distinguished from those of sensation, and the properties of the grey matter have been separated from those of the white portion of the nervous system. In several instances, erroneous inferences have been deduced from experiments bearing on these points; and such instances are dwelt upon by Mr. Noble, as showing the uncertainty of the method; but he seems to have overlooked the fact, that even in the instances referred to, the errors have been corrected, and the truth discovered, by means of similar experiments more judiciously or more extensively conducted.

Mr. Noble's objections to such a mode of investigation are, however, of much greater force, in regard to experiments upon the brain itself, than to those on the nerves; and it is accordingly against the inferences derived by physiologists from vivisections of the cerebellum that he principally directs his attention. While we readily admit that a variety of inferences have been deduced by physiologists from such experiments, yet it would be easy to show that there is a remarkable accordance in the facts of their observations, and that these facts all tend to certain conclusions concerning the uses of that part of the brain widely different from those assigned to it by phrenologists. Were we even to admit that such experiments could lead to no *positive* conclusions regarding the uses of the cerebellum, it is yet quite possible that they may lead to *negative* results subversive of preconceived theories regarding its use. Mr. Noble appears to us to overlook this aspect of the question. The positive inferences from such experiments may, for the reasons he assigns, be unsatisfactory; the effects of the vivisection may be attributable to other causes than the removal of the portion of the brain cut away. The negative inferences, however, as respects any theory, may be complete; for if the animal continues to manifest the function assigned to any particular part of the brain after that part of the brain has been taken away, it is obvious that, whatever function it may have, it certainly cannot exercise that one which had been assigned to it.

A similar remark may be made with reference to the conclusions to be derived from the anatomy of the brain, and from the history of its development in man and in the lower animals. That a more minute and extended knowledge of the facts revealed by comparative anatomy will ultimately lead, combined with other methods of investigation, such as experimental and pathological researches, to the true physiology of the brain, we confidently anticipate; and that much has been done in these departments since Dr. Gall's time, every unprejudiced student of science will admit. Still, we do not deny that the positive results, as respects the functions of a great part of the cerebral mass, are very few indeed. This may be, however, and yet the negative results, as respects the phrenological theory, either in whole or in part, may be conclusive. These may be briefly summed up before leaving the subject.

On examining the brain, we can observe no trace whatever of any divisions corresponding to the different functions assigned to its different parts. Contrary to the assertion of Mr. Noble, we think that distinctness in function is, generally speaking, coincident with mechanical divisions in structure, observable upon careful inspection.

The brain, further, is seen to present a very large extent of surface, composed of convolutions having grey and white matter like the other parts of it, which is not in contact with the inner surface of the phrenological regions. The opposite surfaces of the great inter-hemispherical fissure, and the base of the brain, together present a larger surface than that peopled by the phrenological faculties. Yet this is a terra incognita. The phrenologists have disinherited more than one-half of the brain —they have made a complete mind out of the lesser half, and left nothing for the other to do. Is that unexplored territory inhabited by undeveloped faculties?—faculties which, when discovered and brought into exercise, are to lead us to that more exalted state of being, towards which the author of the Vestiges looks forward as the next stage of development in the future destiny of man?

Comparative anatomy, and the growth of the human brain, alike prove that the last part of the organ to be developed is the posterior part—that the posterior part is peculiar and distinctive of man; and that the lower animals, while they may possess the anterior lobes, the seat of the intellectual faculties, or even the central portion, the seat of the moral sentiments, are destitute of those parts where love of offspring, adhesiveness, destructiveness, and combativeness are found. These facts in the history of the brain are incompatible with the organology of the phrenologists. Mr. Noble may contend that we cannot identify the different parts of the brain in different animals; but the whole science of physiology is opposed to the alternative which he is compelled to adopt.

Pathological investigations have, as yet, thrown little additional light upon the physiology of the brain. They are yet in their infancy, and it is to be hoped that, ere long, they will lend their aid in the elucidation of this interesting subject. The results of our present knowledge of this subject are in some particulars favourable to phrenology; in others, they are the reverse. Many cases of disease have been collected in proof of the phrenological theory regarding the cerebellum; and although there are also many cases which tend towards a different conclusion, it may be admitted that, on the whole, the evidence preponderates on the side of phrenology in this instance.

The pathology of insanity appears to us to offer a wide and inviting field of inquiry. It is one which hitherto has been but rudely and unprofitably explored. It is but recently, if at all, that morbid changes, which are accidental and irrelevant, have been distinguished from those which are essential. The improved methods of treating the insane have been but too recently introduced; and it is but too lately, and far too imperfectly as yet, that the unhappy subjects of this malady have been removed from the mere *keeper*, and placed under the care of those whose habits of observation and scientific attainments could lead us to anticipate discoveries in this quarter. But when this department of pathological inquiry shall have been cultivated with the same industry and skill, and with the same aids and appliances as others, we may reasonably anticipate a rich harvest of truth. Meanwhile, we may remark, that mental pathology throws some light upon the structure of the mind, which, in our judgment, accords not with the doctrines of phrenology.

Insanity has been frequently appealed to by phrenologists, as affording corroboration of their system. In cases of monomania, it is said that satisfactory evidence is given of the existence of the separate faculties which they have assigned to us. In that unhappy maniac tearing his clothes, you have a proof of the existence of a separate organ for Destructiveness. In that dignified form, 'every inch a king,' you have diseased Self-esteem; and in that poor creature who fancies he is too large to pass through any door, however wide and lofty, you have disease of the organ of Form, and so of the other faculties. We have always thought that the popularity of phrenology depended very much upon the readiness with which it gave an apparent explanation of character. And here it appears to the same advantage, having all the apparent evidence in its favour, which a key has of being the right one, when it enables you to open the door. But the advantage is all in the apparent facility of the solution; for when examined more narrowly, it is found to be unsatisfactory and unreal, and very much like the solution which the physician gives to his patient, under cover of a solemn shake of the head, to the very difficult question, 'Why do I feel this pain here?' 'Oh, ma'am, it is the nature of the disease.'

Nay, the examination of the solution leads to a contrary conclusion; for it will be observed, that in the great majority of cases of monomania, the individual shows his insanity, not in any derangement of *a faculty* of thinking, but with reference only to *one object* of thought. In disease of the organ of Form, it is not a faculty of thinking which is diseased in its operations; the individual is in error only in reference to his own form, not in regard to the form of other objects. In disease of the so-called organ of Language—a familiar occurrence—in its most frequent form, the person loses his recollection of proper names; in its more marked degree, he loses his recollection of nouns in general, while, in other instances, the remembrance of an entire language is lost, and the individual uses the vernacular of early life, long before disused, and apparently forgotten. A native of Ireland, or of Wales, after thirty years' residence in London forgets his English, and talks only in the Erse or the Welsh of his boyhood. Similar remarks might be extended to almost all the cases of partial insanity vaunted by phrenologists in proof of their faculties. If they prove anything at all, they prove too much for phrenology; they prove that there are organs for nouns, and organs for verbs—organs for Welsh, and others for English—one organ for the estimate of one's own form, and others for the estimate of the forms of other objects. One individual with excited Destructiveness seeks only to wreak his vengeance on articles of furniture or to tear his clothes to tatters; another delights only in setting fire to the objects within his reach; a third endeavours to destroy himself, while a fourth seeks only the life of others. Are there, therefore, separate organs affected in each of these cases? If so, where are they, and if not, how can an organ be diseased in its operations with reference only to one object, and sound in its workings with reference to others?

We have pointed out these difficulties, not in a spirit of hostility, or prejudice, but, as we trust, from a desire to forward the interests of truth, by directing attention to more correct methods of observation and more extended inquiries than those to which phrenologists would limit us. We are fully alive to the services which phrenology has afforded to metaphysics, and to those which its founder has rendered to the anatomy of the brain. With reference to the former, while we cannot admit the large pretensions of some of Gall's followers, or that the thirty-five faculties of his system afford a theory of mind more in conformity with our own consciousness, or more nearly approaching to elementary faculties than the thirty-five innate faculties of Kant, or those of any other metaphysician; yet we readily admit that Phrenology has forced upon us more correct notions of mental *faculties*, as distinguished from affections of the mind, ideas, or the principles by which these, the functions, only, of the mind are regulated. We have, at least, more accurate formulas, and a more precise language for our metaphysics, than we had before.

Of the brain, our anatomy, previous to Gall's time, was a description in Babylonish dialect of unmeaning and accidental heights and hollows. It is now advancing towards an accurate knowledge of its structure and arrangements, and the connexions between its different parts. When the comparative anatomy of the brain shall be fully known, and shall have been studied with reference to the habits and psychological phenomena characterizing the different animals in the scale; when the inferences from these observations shall have been corrected by experimental inquiries, and extended and confirmed by pathological researches, we may then, perhaps, begin to find out the 'True Physiology of the Brain.'

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